

REMARKS/ARGUMENTS

Applicant thanks Examiner for the detailed Office Action dated April 26, 2007. In response to the issues raised, the Applicant offers the following submissions and amendments.

Amendments

Claim 1 has been amended to focus on the structural features of the printhead that distinguish it from the prior art. In particular, actuators and nozzles are formed in chambers on the ejection side of the wafer. The holes that partially define the liquid passages to the supply side of the wafer extend from the chamber, through the layers of drive circuitry and partially through the monolithic wafer. The hole is formed so that it is narrower than the supply passage from the supply side and the chamber that it supplies with printing fluid. This arrangement is shown in every one of the preferred embodiments.

Claim 6 has been cancelled in light of the new definition provided by claim 1 and claim 7 has been amended to depend from claim 1.

To expedite prosecution, claims 17 to 29 have been cancelled.

Accordingly, the amendments do not add any new matter.

35 USC §102 - Claims 1, 5, 7 and 8

Claims 1, 5, 7 and 8 stand rejected for lack of novelty in light of US 5,815,173 to Silverbrook. The rejection of claims 17 to 24 is moot in view of their cancellation.

Amended claim 1 defines a structure that clearly differs from the '173 arrangement. The hole provides a fluid inlet to each chamber but importantly, it is narrower than the chamber and the corresponding supply passage. The constriction provided by the small hole increases the resistance to any back flow out of the chamber as the actuator ejects a drop. The narrow holes through the drive circuitry layers minimize the punctuations through the individual CMOS metal layers which can increase parasitic resistance.

The '173 printhead does not have an array of chambers with a relatively narrow fluid inlet. The bubbles formed by the heater elements must be large enough to eject ink despite a relatively high back flow. Also the nozzle plate and the drive circuitry are immediately adjacent so the spacing between the heater and the nozzle aperture holds a relatively large mass of ink. In the present invention, forming a chamber on the outside of the drive circuitry layers allows the actuator and the nozzle can be close to each other. Hence the mass of ink to be moved during ejection is reduced so the bubble is likewise smaller and requires less energy to produce.

Accordingly, the cited reference fails to teach all the elements of amended claim 1. It follows from the above that dependant claims 2, 3, 4, 5, 7 and 8 are likewise novel and inventive.

Conclusion

It is respectfully submitted that the Examiner's rejection has been successfully traversed and the application is now in condition for allowance. Accordingly, favorable reconsideration is courteously solicited.

Very respectfully,

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